



environmental specialists

Basic Assessment

CONSTRUCTION OF A GAUGING WEIR
IN THE CALEDON RIVER,
ZWAGERSHOEK, CLOCOLAN

February 2013

Applicant:
DWA, FS

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Refer to Appendix H attached hereto for the Declaration of Interest and the expertise of the project team to conduct the relevant studies.

NATIONAL AUTHORITY

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PROVINCIAL AUTHORITY

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

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14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

Background:

The Free State Department of Water Affairs (DWA, FS) and the Lesotho Department of Water Affairs (DWA, Les) identified a need to measure accurate medium to low flow measurements in the Caledon River near the Ficksburg / Clocolan area.

The construction of a gauging weir in the Caledon River, 17 km south east of Clocolan, on the remainder portion of the farm Zwagershoek 27, Free State Province was therefore proposed by the two parties.

The structure will consist of a concrete structure through the river with 2 notches where flows are measured. The lowest notch is 14 m wide where low flow is measured. The overflow of the 2nd notch to measure higher flows is about 30 cm higher and 25 m wide (please refer to Appendix C). Instrumentation to measure continuous flows will be installed in a secured instrumentation structure on the side of the South African side of the river.

The directorate of hydrology of DWA, FS will be able to collect the flow data on a regular basis. In addition, water quality samples will also be taken on regular intervals to generate a history of flow and water quality data over time. The result thereof will be used in future catchment management decisions.

Activities associated with the construction phase:

- Removal of riparian vegetation near construction area.
- Stockpiling of topsoil.
- Preparation for construction (including removal of river bed material) to stabilise foundation of the proposed weir.
- Implementing in stream measures to channel water away from the section of the weir to be constructed at a given interval.
- It is anticipated that the weir will be constructed in two to three sections and no blockage of water will occur during the construction period.

Rehabilitation after construction:

- Stabilisation of disturbed areas on the river bank by using the topsoil stockpiled during the construction phase.
- Monitor the re-growth of natural occurring vegetation on the river bank.

Operational phase:

Activities associated with the operational phase will only include the functioning of the weir. This includes water level measurements and maintenance and repair of the weir, where necessary.

Decommissioning and rehabilitation:

It is not anticipated that the project be decommissioned in the near future due to the necessity to measure the flow of the Caledon River to manage the resource optimally.

Should it be decommissioned in future, the weir will be demolished and the area rehabilitated according to a rehabilitation plan that will be developed by the applicant and submitted to DEA for their approval prior to decommissioning. This plan will, as a minimum, include the removal of building rubble and the stabilising of the bed and banks of the river according to best practices.

Assumptions:

It is assumed that no water will be abstracted from the river to be utilised during the construction period as ready mixed concrete will be used.

Most of the construction activities will take place during the dry season (winter months).

Uncertainties:

The duration of construction activities is uncertain as this will be influenced by weather conditions.

The potential influence of possible future projects in the Caledon River catchment is uncertain.

The amount of time that the weir is expected to act as a barrier to migrating fish species are not certain, however, a more detailed analysis of the daily hydrological records and the flow duration are expected to inform this time period. This will be investigated and included in the final fish assessment report and final BAR.

Knowledge gaps:

The current document (Draft BAR) is submitted to I&AP's that includes the authorities. Comments and response on this report will be included in the Final BAR.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN R.544, 545 and 546	Description of project activity
GN R.544 Item 11(v): The construction of a weir where such construction occur within a watercourse	A gauging weir measuring 39 m in length, 5.5 m in height (measuring from bed bank to top of measuring pillar) and approximately 29.2 m wide in stream are to be constructed in the Caledon River

2. FEASIBLE AND REASONABLE ALTERNATIVES

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

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Describe alternatives that are considered in this application as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>It is proposed that the weir should be constructed near the southern border of the farm Zwagershoek 27/0, Clocolan, Free State.</p> <p>The river is almost straight for ±2 km, with a similar HASL and the width of the river is almost similar for approximately a kilometre. The above aspects as well as the stability of the bed banks make this area most suitable for the proposed project as this will enable the applicant to measure the river flow most accurately.</p>	29° 00' 19.93"S	27° 41' 35.01"E
Alternative 2 (Locality)		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>Same as above, with the following exceptions:</p> <p>The river bends strongly at this point.</p> <p>A measuring weir in this area will cause erroneous measurements as the stream will measure a faster flow on the eastern side of the river, in comparison to flow on the western side.</p> <p>In addition, the curvature leads to the loss of river bank material on the eastern side due to the faster flow during rainy events and the off-set of material on the western side.</p> <p>As a result of the above, a weir in the area will be influenced due to the siltation of material upstream of the weir.</p>	28° 59' 28.18"S	27° 42' 58.19"E

b) Lay-out alternatives

NOTE:

A weir should be constructed perpendicular to the banks of a river. Therefore, there is no feasible lay-out alternatives that will be discussed for this project.

c) Technology alternatives

NOTE:

The flow can be measured manually by an employee once a day or on a weekly basis. This alternative will be costly, time consuming, periodically, inconsistent and will not be considered as a feasible alternative.

The most up to date mechanical technology will be used to measure the water flow accurately on an hourly basis. The different types of equipment available in the market to measure the water flow at weirs do not have an environmental impact and therefore no alternatives in terms of technology will be discussed or further assessed.

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Scheduling

Alternative 1 (preferred alternative)

Due to the nature of the construction activities and the locality of the proposed project, the construction activities will be undertaken after the normal raining season as this will keep the construction period to a minimum.

In addition, the possibility that already constructed pieces will be flooded during the rainy season will be minimised if the construction takes place during the dry season.

Alternative 3 (Scheduling)

Construction activities can be undertaken in the raining season. However, this will extend the construction period as the higher water levels and periodically flooding will influence the construction activities.

Design

Alternative 1 (preferred alternative, without a fish ladder)

South African rivers are subject to large and sudden variations in discharge. Compound gauging weirs are used in these conditions in attempt to ensure accurate gauging and sensitivity over a wide range of discharges in streams as it consists of a series of individual weirs, with the crest of each weir at a different level. The low discharges will normally flow only over the lowest crest (called the low notch) of the weir.

The higher weir crests / notches will only function when the discharge increases and this ensures that discharge can be gauged accurately over a wide range of flows without causing an excessive damming of water upstream of the weir.

The maximum difference in adjacent crest levels should not be more than 50 cm. Flowlines should be semi-circular or semi-elliptical. In order to avoid sharp curvatures in flowlines at the entrances, the thickness of the dividing walls should be at least 30 cm.

The water levels are measured at a single section of a compound weir.

Most compound weirs constructed in South Africa do not have dividing walls due to the costs involved as well as to minimise the risk of floating debris (such as branches) being trapped and affecting the accuracy with which the water flows are gauged.

The preferred proposed type of weir (with two sections / notches) will enable the applicant to measure the water flow during low water and high water level intervals. The lowest notch will be 14m wide and 1.9m high from the riverbed, while the high notch will be approximately 25m wide and 2.1m high measured from the riverbed. The design of the weir will limit the damming of water during dryer seasons as the water will be able to flow over the lower part of the proposed gauging weir.

Alternative 4 (Design, with a fish ladder)

The alternative to the **preferred weir design** will also consist of two measuring notches with the same specifications as the preferred alternative. However, the design of the alternative (i.e. Alternative 4) will make provision for the construction of a fishway. This will prevent any potential impacts on the upstream migration of fish in the river during the key migrating periods.

This alternative is very labour intensive, time consuming and high in costs. A Fish Assessment was undertaken to assess the priority and feasibility of a fishway as mitigation measure to limit the potential impacts on the migrating fish species as a result of the proposed gauging weir. Refer to Appendix D for the Fish Assessment Report.

e) No-go alternative

If the 'no-go' alternative is decided on, DWA FS and DWA Lesotho will not be able to measure the water flow and no obstruction in the river will be constructed.
The 'no-go' alternative will be considered throughout the assessment of the proposed project.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

- Alternative A1¹ (preferred activity alternative)
- Alternative A2 (Site)
- Alternative A3 (Scheduling)
- Alternative A4 (Design)
- No-go alternative

Size of the activity:

	2 000 m ²
	2 000 m ²
	2 000 m ²
	2 100 m ²
	0 m ²

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

NOTE:

All the proposed alternatives are situated on the farm Zwagershoek 27/0, Clocolan.

Alternative:

Alternative A1 (preferred activity alternative)
 Alternative A2 (Site)
 Alternative A3 (Scheduling)
 Alternative A4 (Design)
 No-go alternative

Size of the site/servitude:

Alternative A1 (preferred activity alternative)	283 5597 m ²
Alternative A2 (Site)	283 5597 m ²
Alternative A3 (Scheduling)	283 5597 m ²
Alternative A4 (Design)	283 5597 m ²
No-go alternative	0 m ²

4. SITE ACCESS

Alternative A1 (preferred activity alternative)

Does ready access to the site exist?	YES	
If NO, what is the distance over which a new access road will be built		m

Alternative A2 (Site)

Does ready access to the site exist?		NO
If NO, what is the distance over which a new access road will be built		60 m

Alternative A3 (Scheduling)

Does ready access to the site exist?	YES	
If NO, what is the distance over which a new access road will be built		m

Alternative A4 (Design)

Does ready access to the site exist?	YES	
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

NOTE: ROAD PLANNED FOR ALTERNATIVE 2:

One lane gravel road has to be cleared of vegetation and stabilised where necessary with additional gravel from an authorised source.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;

- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

<p>NOTE:</p> <p>NEED: Currently, the water flow in the area cannot be measured as no functioning measuring station is available. The proposed gauging weir will assist DWA with the management of the resource, enabling downstream users (including farmers) to use the resource sustainably.</p> <p>DESIRABILITY: The weir will aid the applicant (DWA, Free State) and DWA, Lesotho to measure the water flow in the Caledon River on a regular basis. This will assist in decision making processes in terms of potential future projects. This will also aid the downstream users (for example local farmers) that abstract water from the Caledon River to have more information on the availability of water on hand.</p>

1. Is the activity permitted in terms of the property's existing land use rights?	YES		
The activity will be undertaken on agricultural land. The gauging weir will assist DWA with the management of the resource, enabling downstream users (including farmers) to use the resource sustainably. The landowner gave consent for the proposed project and no land-use change is necessary for proposed activity.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES		
The proposed activity entails the establishment of a weir in the Caledon River. This activity will have no influence on the PSDF.			
(b) Urban edge / Edge of Built environment for the area	YES		
The proposed construction site is located outside the urban edge and will be limited to the construction of a weir and associated activities. The proposed activity will not have an influence on the urban edge / edge of built environment as it is located on farmland. An unused, insufficient measuring station is located 50m upstream, on the Lesotho side of the border. Please refer to Appendix B for a photograph indicating the unused measuring station.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES		
The proposed project will not have an influence on the IDP or SDF of the local municipality.			

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(d) Approved Structure Plan of the Municipality			NOT APPLICABLE
No plans need to be approved by the local municipality as the proposed activity does not form part of the municipal jurisdiction with regards to structure planning.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES		
There is no approved Environmental Management Framework for this area. The approval of this application will not have an influence on the integrity of the existing environmental management priorities for the area.			
(f) Any other Plans (e.g. Guide Plan)			NOT APPLICABLE
The proposed construction of a weir in the Caledon River will not have an influence on any other municipal plans.			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?			NOT APPLICABLE
The proposed construction activities will not have an influence on the timeframes / programmes identified within any known futuristic development plans.			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES		
The weir will aid the applicant (DWA, Free State) and DWA, Lesotho to measure the water flow in the Caledon River on a regular basis. This will assist in decision making processes in terms of potential future projects. This will also aid the downstream users (for example local farmers) that abstract water from the Caledon River to have more information on the availability of water on hand.			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)			NOT APPLICABLE
No municipal services are to be provided for the proposed project. A generator will be used for the generation of electricity where necessary during the duration of the construction phase. Solar energy will be used during the operational phase.			

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<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>			<p align="center">NOT APPLICABLE</p>
<p>The proposed project entails the construction of a weir in the Caledon River on agricultural land, outside the municipal jurisdiction area. Therefore, no plans need to be approved by the local municipality. The proposed project will also not have an implication on the infrastructure planning of the municipality as no services etc. have to be supplied by the municipality.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<p align="center">YES</p>		
<p>DWA (FS) need to measure the flow in the Caledon River. The results thereof will be made available to the National Department of Water Affairs and DWA, Lesotho. This will assist in decision making processes in terms of potential future projects.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	<p align="center">YES</p>		
<p>The weir (if approved) will be constructed in the Caledon River, on farmland. Consent was received from the landowner and no land-use change is necessary for proposed activity.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<p align="center">YES</p>		
<p>The river bed and banks in the area is stable, although it is covered with sand. The river upstream is relatively straight.</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	<p align="center">YES</p>		
<p>No change in land use will be needed for the proposed activity. Although the negative impacts include the damming of water upstream of a proposed weir, the proposed weir will be constructed in such a way to limit the extent thereof and enable the water to pass through the weir even in low flow. The positive impacts of the weir include a more accurate reading of the water flow of the Caledon River in this area. This information can be used to assess the possibility of water shortages downstream.</p>			
<p>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</p>		<p align="center">NO</p>	
<p>It is not anticipated that similar activities will be undertaken in the nearby area. However, if it is decided that the information received from the proposed weir is insufficient, DWA Lesotho / DWA FS may investigate the construction of a weir upstream or downstream of the proposed site.</p>			

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12. Will any person's rights be negatively affected by the proposed activity/ies?		NO	
<p>The weir will not cause a water shortage downstream due to the damming of water. Therefore, it is not anticipated that any downstream users will be negatively affected by the proposed activities.</p>			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES		
<p>The urban edge will not be affected by the proposed activities as the weir will be constructed in the Caledon River, on the border of the farm Zwagershoek.</p>			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES		
<p>SIPS 17 (Regional integration for African cooperation and development) states that South Africa should participate in mutually beneficial infrastructure projects to unlock long term socio-economic benefits, such as transport, water and energy activities.</p> <p>The Lesotho Highlands bulk water resources project and activities linking to the Lesotho Highlands project can therefore be seen as activities that contribute to the Strategic Integrated Projects. The proposed weir will aid DWA, FS and DWA, Lesotho to measure the flow in the Caledon River. This will assist the departments in decision making processes regarding the storage / releasing of water within the Lesotho Highlands dams when necessary.</p>			
15. What will the benefits be to society in general and to the local communities?			
<p>The measuring of water flow will enable DWA, FS and DWA, Lesotho in making decisions regarding storage and / or releasing of water within the Lesotho Highlands dams, when necessary. It will also contribute to the existing data regarding the availability of water to downstream users and assessing climatic factors, such as whether droughts / exceptional wet seasons can be expected.</p>			
16. Any other need and desirability considerations related to the proposed activity?			
<p>Many people (especially in Gauteng) are dependant on the water that flows from three dams in Lesotho, to South Africa. It is therefore desired that the state of the water (quality and quantity) are known by the water suppliers.</p> <p>DWA, FS and DWA, Lesotho desire to plan ahead for any possible water shortages, etc. Therefore, the above mentioned departments need to measure the water flow in this area accurately.</p>			
17. How does the project fit into the National Development Plan for 2030?			
<p>The weir will enable DWA, FS to measure the water flow in the Caledon River. This will aid DWA, FS to take precautionary measures should the flow not be sufficient for the abstraction of downstream users or planning for future projects.</p> <p>In addition, the weir forms part of the Lesotho Highlands scheme that supplies water to Gauteng. The project is thus of national importance as many people rely on the water from the Lesotho Highlands on a daily basis.</p>			

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

According to Section 23 of NEMA, 1998, the following should be considered:

- **EIA process for listed activities should be followed**

An application for environmental authorisation was submitted to DEA

River index of habitat integrity and riparian vegetation assessment was undertaken

A workshop to determine the necessity of a fishway were undertaken

The Final BAR will be submitted to DEA for approval (or not)

- **Compilation of an EMPr**

An EMPr containing management measures to be implemented to limit environmental impacts are attached hereto.

- **Public participation process should be undertaken**

All possible interested and / or affected parties were notified of the proposed project

I&AP's were given the opportunity to register and comment on the Draft BAR

- **Other necessary approvals should be obtained**

As the weir will be constructed in a water resource (if approved), an application for registration of the necessary water uses was submitted to DWA, FS

Please see proof thereof attached hereto

- **Need in terms of socio-economic level**

The need in terms of the socio-economic level was assessed

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

According to Section 23 of NEMA, 1998, the following should be considered:

- **EIA process for listed activities should be followed**

An application for environmental authorisation was submitted to DEA. DEA acknowledge receiving the application and provided this office with a reference number.

The results obtained from the river index of habitat integrity and riparian vegetation assessment as well as the workshop on the possible construction of a fishway were used to assess the possible impacts (positive and negative) on an environmental as well as social level.

The DRAFT BAR was made available to the relevant departments and to the public to comment.

The comments received will be assessed and included in the FINAL BAR to be submitted to DEA for approval (or not).

- **Compilation of an EMPr**

An EMPr containing management measures to be implemented on site was compiled by taken the possible impacts that the proposed project may have on the environment, into consideration.

- **Public participation process undertaken**

The landowner and adjacent landowners were notified of the proposed project by means of a letter delivered by hand / e-mail / postage.

In addition, a site notice was placed at the entrance of the farm and a notification was published in a local news paper.

The local municipality, and the Free State Dept. of Economic, Tourism and Environmental Affairs were also notified of the proposed project.

I&AP's were given the opportunity to register and comment on the Draft BAR. Comments received were assessed and included in the Final BAR.

In addition, this office responded by means of a letter to the registered parties.

- **Other necessary approvals should be obtained**

Please see a copy of the authorisation from DWA, FS, for the proposed construction of a weir in the Caledon River.

- **Need in terms of socio-economic level**

Currently, the water flow in the area cannot be measured as no functioning measuring station is available. The weir will enable DWA, FS to measure the water flow in the Caledon River. This will aid DWA, FS to take precautionary measures should the flow not be sufficient for the abstraction of downstream users. In addition, the weir will assist in decision making processes in terms of potential future projects.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (Act No 107 of 1999)	Construction of a weir in the Caledon river	Department of Environmental Affairs and Tourism	1998
National Water Act (Act 36 of 1998)	An application for the necessary water use authorisation was submitted to the Department of Water Affairs regarding the construction of a weir in the Caledon River.	Department of Water Affairs	1998
National Heritage Resources Act [No. 25 of 1999]	SAHRA should be notified if any artefacts / graves / fossils / features of heritage importance are observed during the construction / operational / rehabilitation process.	Department of Arts and Culture	1999

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

	NO
--	----

 If YES, what estimated quantity will be produced per month?

	m ³
--	----------------

How will the construction solid waste be disposed of (describe)?

Where will the construction solid waste be disposed of (describe)?

Will the activity produce solid waste during its operational phase?

	NO
--	----

 If YES, what estimated quantity will be produced per month?

	m ³
--	----------------

 How will the solid waste be disposed of (describe)?

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

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Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

--

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

	NO
--	----

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

	NO
--	----

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

	NO
--	----

If YES, what estimated quantity will be produced per month?

	m ³
--	----------------

Will the activity produce any effluent that will be treated and/or disposed of on site?

	NO
--	----

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

	NO
--	----

If YES, provide the particulars of the facility:

Facility name:		
Contact person:		
Postal address:		
Postal code:		
Telephone:	Cell:	
E-mail:	Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

--

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

	NO
--	----

If YES, is it controlled by any legislation of any sphere of government?

--	--

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

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d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

	NO
--	----

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?

YES	
-----	--

 If YES, is it controlled by any legislation of any sphere of government?

	NO
--	----

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the noise in terms of type and level:

Nuisance noise and dust may be generated during the construction period. However, the significance thereof will be low and limited to areas under construction.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
-----------	-------------	-------------	----------------------------	-------	---------------------------------

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

0 litres

 Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

	NO
--	----

 If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

Note:
 It is not anticipated that water will be abstracted from groundwater or from the river for use during the construction activities as the applicant will make use of ready mixed concrete.

14. ENERGY EFFICIENCY

Describe the design measures, if any that have been taken to ensure that the activity is energy efficient:

It is suggested that solar panels should be installed where necessary.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

None

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Free State
District Municipality	Thabo Mofutsanyane District Municipality
Local Municipality	Setsoto Local Municipality
Ward Number(s)	9
Farm name and number	Zwagershoek 27/0
Portion number	0
SG Code	F 008 000 000 000 027 000 00

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Agricultural land

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? NO

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1 (Preferred):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

Alternative S2 (Site) alternative:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

Alternative S3 (Scheduling alternative):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

Alternative S4 (Design alternative):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input checked="" type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1 (preferred):		Alternative S2 (Site):		Alternative S3 (Scheduling):		Alternative S4 (Design):	
Shallow water table (less than 1.5m deep)	YES		YES		YES		YES	
Dolomite, sinkhole or doline areas		NO		NO		NO		NO
Seasonally wet soils (often close to water bodies)	YES		YES		YES		YES	
Unstable rocky slopes or steep slopes with loose soil	YES		YES		YES		YES	
Dispersive soils (soils that dissolve in water)		NO		NO		NO		NO
Soils with high clay content (clay fraction more than 40%)		NO		NO		NO		NO

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Any other unstable soil or geological feature		NO		NO		NO		NO
An area sensitive to erosion	YES		YES		YES		YES	

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition ^E	Natural veld with scattered aliens^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “^E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River		NO	
Non-Perennial River	YES		
Permanent Wetland		NO	
Seasonal Wetland		NO	
Artificial Wetland		NO	
Estuarine / Lagoonal wetland		NO	

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The proposed weir will be constructed in the Caledon River which is essentially a non-perennial river with intermittent surface flow.

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According to the State of the Rivers Report (Free State Region River Systems, 2003), the overall health of the Caledon River is fair upstream of the Welbedacht Dam (in Wepener) and poor downstream. Grassland covers almost 100% of the Caledon catchment area, but poor management practices result in high sediment yields. A further sediment deposition occurs due to the erodability of the soils in the upper Caledon catchment area.

The available habitat upstream of the Gariep Dam is relatively unimpacted and the overall health of the river to this point is relatively good.

Thus, the overall health of the river at the proposed construction site, is relatively good, according to the State of the Rivers Report (Free State Region River Systems, 2003).

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN}	Railway line ^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity?

N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

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Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)		NO
Core area of a protected area?		NO
Buffer area of a protected area?		NO
Planned expansion area of an existing protected area?		NO
Existing offset area associated with a previous Environmental Authorisation?		NO
Buffer area of the SKA?		NO

NOTE:

Although there is currently no critical biodiversity areas as per provincial conservation plan available for the Free State Province, a summary of the biodiversity status of Sesotho Local Municipality is available from the "Municipal Biodiversity Summary Project". According to this information the study area is situated in the Grassland Biome. More specifically, Clocolan is situated in the Eastern Free State Sandy Grassland (Gm 4) and Basotho Montane Shrubland (Gm 5) (Musina and Rutherford, 2006). However the area identified for the construction of a weir does not fall within a critical- or protected area as defined by the mentioned municipal biodiversity project. Refer to Appendix A for more information and a map indicating the critical identified areas, according to Biodiversity GIS.

The river bank itself is heavily overgrazed and the trampling by domestic animals adds to the decrease in vegetation and degradation of the river banks due to erosion etc. The riparian vegetation of the lower zone of the river bank consists primarily of grasses and herb as well as exotic poplar trees and isolated weeping willows. In addition, the lower zone is degraded to a certain extent and exotic species are common. Please refer to the River Index of Habitat Integrity (IHI) and riparian vegetation assessment for the proposed establishment of a measuring weir within the Caledon (Mohokare) River (Quaternary Drainage Region: D22D) attached as Appendix D for an explanation on the zones to be found on the river bank.

The upper zone on the South African border is characterised by ephemeral features as well as riparian and terrestrial vegetative species. This zone is dominated by poplar trees that form dense stands and exclude most other vegetation, contributing to the degradation of this zone.

In contrast, the riparian zones on the Lesotho side of the river is severely degraded and transformed. In addition, the riparian vegetation is absent in many areas.

In conclusion, the Caledon River remains a sensitive environment due to the ecological services it provides. However, the condition of the instream and riparian habitats are severely degraded.

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

	NO

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If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

N/A

Will any building or structure older than 60 years be affected in any way?

NO

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

NO

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

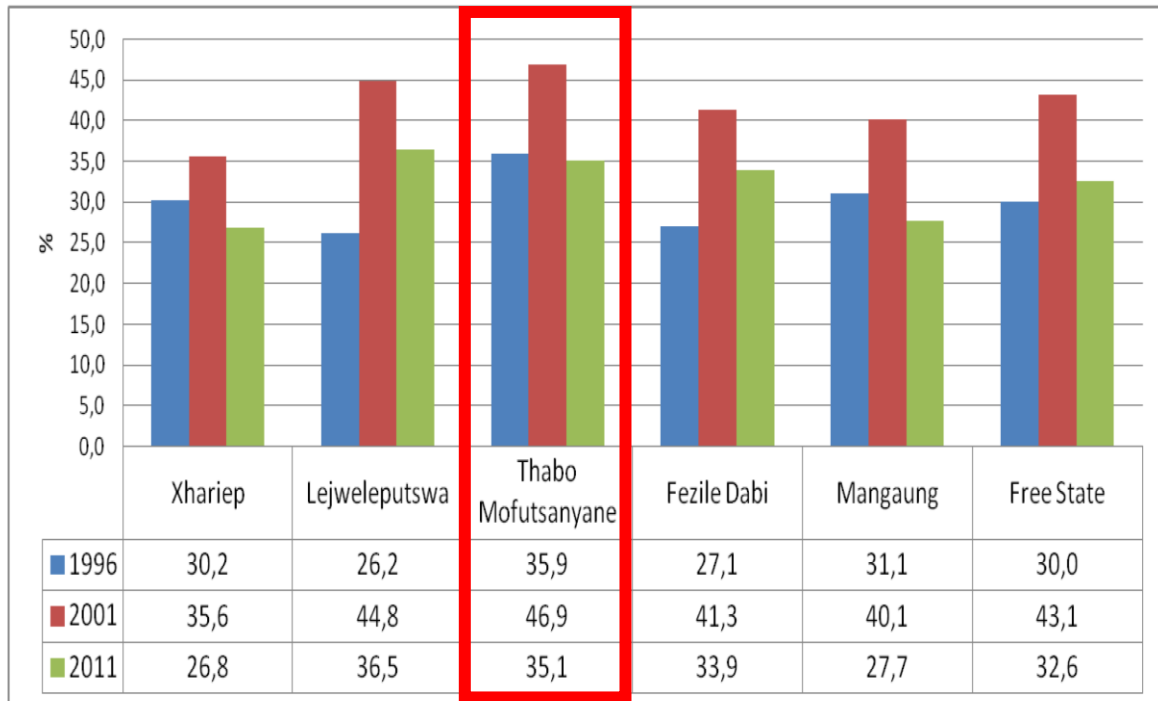
8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

Percentage of persons within a given area that is unemployed:



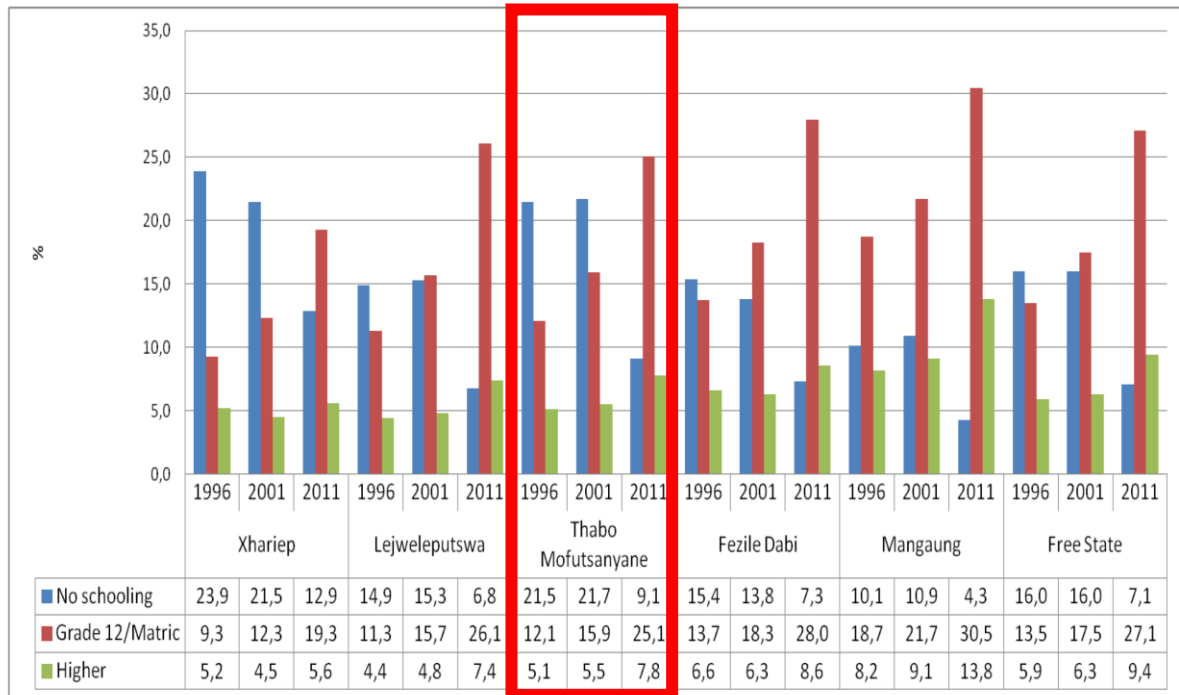
Economic profile of local municipality:

The municipal area is economically driven by agricultural activities and many of the commercial activities in the area are focussed on the selling of agricultural products, food and clothing. According to the revised Free State Provincial Growth and Development Strategy (2007), more than 71% of the households in Setsoto received less than R800 per month in 2007.

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Level of education:

Percentage of persons in a given area with a certain level of education.



b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

What is the expected yearly income that will be generated by or as a result of the activity?

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

How many new employment opportunities will be created in the development and construction phase of the activity/ies?

What is the expected value of the employment opportunities during the development and construction phase?

What percentage of this will accrue to previously disadvantaged individuals?

How many permanent new employment opportunities will be created during the operational phase of the activity?

What is the expected current value of the employment opportunities during the first 10 years?

What percentage of this will accrue to previously disadvantaged individuals?

R 2 000 000	
R0	
YES	
	NO
New employment opportunities will depend on the contractor appointed	
± R60 000	
75%	
0	
N/A	
N/A	

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org>

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or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

- a) **Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)**

NOTE:

Although there is currently no critical biodiversity areas as per provincial conservation plan available for the Free State Province, a summary of the biodiversity status of Sesotho Municipality is available from the "Municipal Biodiversity Summary Project". According to this information the study area is situated in the Grassland Biome.

More specifically, Clocolan is situated in the Eastern Free State Sandy Grassland (Gm 4) and Basotho Montane Shrubland (Gm 5) (Musina and Rutherford, 2006). However the area identified for the construction of a weir does not fall within a critical- or protected area as defined by the mentioned municipal biodiversity project.

However, the proposed weir will be constructed within the Caledon River itself, and no grassland vegetation will be removed for the proposed construction activities to be undertaken.

According to the IHI and riparian vegetation assessment (please see attached hereto), the instream and riparian habitats are severely degraded in the area. However, the Caledon River remains a sensitive environment due to the ecological services it provides.

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	No critical biodiversity areas as per provincial conservation plan are available for the Free State Province. Although the instream and riparian habitats are severely degraded in the area, the Caledon River remains a sensitive environment due to the ecological services it provides.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	10%	Seasonal plants that extends from the marginal zone
Near Natural (includes areas with low to moderate level of alien invasive plants)	40%	Areas that contain exotic poplar trees
Degraded (includes areas heavily invaded by alien plants)	50%	Areas containing exotic poplar trees and weeping willows
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	0%	

c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems								
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline			
	Endangered									
	Vulnerable									
	Least Threatened									
		YES	NO	UNSURE	YES	NO	YES	NO		

- d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Vegetation type:

Riparian vegetation consisting primarily of grasses and herbs although exotic poplar trees and weeping willows are also present.

Riparian and terrestrial species, dominated by exotic poplar trees.

Aquatic:

the Caledon River is known to be subjected to both large floods, generally during the summer months, and periods of surface flow intermittence, generally during the winter months (Jacot Guillarmod, 1972; Jubb, 1972; Baird, 1976). According to Germond (1967; as cited in Jacot Guillarmod, 1972) earlier reports indicated that in summer the Caledon River could flow on level with its banks, up to 300 feet wide at some places, and reaching water depths of 20 feet. These periodical floods could recur three or four times between November and April, with the first flood lasting approximately ten to twelve days and the following floods between five and six weeks (Germond, 1967 cited in Jacot Guillarmod, 1972). In contrast, Jubb (1972) reported the Caledon to be dry for a distance of approximately 300 km (from Fouriesburg to below Wepener) in May 1970 (the river still flowed in December 1969). He noted the formation of isolated pools in the river bed at Peka Bridge, trapping fish. Historical reports, from as early as 1834, mentioned the deterioration of conditions in the river, specifically the presence of thick layers of silt (drift sand) in the river (Jacot Guillarmod, 1972). Marshall (1972) reported that the deep, rocky clear pools known to exist in the river were being silted up and that the river had been changing into a "shallow, muddy" river.

The present ecological state (PES) of the Caledon River and its tributaries are generally considered to be largely modified from its natural state with a large loss of natural habitat, biota and basic ecosystem functions evident (Louw et al., 2010). The PES of a river is an expression of how much the present condition of the components of a river ecosystem deviates from their natural state (before human impacts). Reference is generally made to both the driver components (e.g. physic-chemical variable, hydrology, geomorphology) and the biological responses (e.g. riparian vegetation, fish, macroinvertebrates). This gives an indication of the river's capacity to provide human's with ecosystem services.

In a recent study assessing the PES of rivers in the Orange River Basin, the Caledon River and its tributaries were considered to be of low ecological importance and sensitivity (except for D21A and D21D which falls within the Golden Gate National Park) (see Louw et al., 2010). This implies that the river is not seen as unique at any scale and is perceived as not very sensitive to flow modifications. The same study also concluded that the generally degraded nature of the Caledon River, decreases its value in a socio-cultural context, implying that the utilisation of the ecosystem is not as high, from a socio-culturally perspective, as it may have been historically (see Louw et al., 2010 for further information). Louw et a. (2010) further identified a number of priority areas and hotspot in the Orange River catchment. Based on a combination of the ratings for Ecological Importance and Sensitivity, Present Ecological State and Social-cultural Importance and the importance of the Water Resource Use a number of priority areas were identified in each of the sub-basins of the Orange River system. No priority areas were identified in the Caledon River on the South African side and most of the catchment was viewed to be of low priority and that only rapid environmental assessments are needed in this area.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	The Daily Sun	Die Volksblad
Date published	13 February 2013	5 February 2013
Site notice position	Latitude	Longitude
	28°56'47.24"S	27°39'11.86"E
Date placed	8 November 2012	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

NOTE:

As indicated, site notices were placed at the entrance to the farm and advertisements placed in the local newspapers. Identified I&APs related to this project (e.g. adjacent landowners) were contacted and informed of the project telephonically, and per email.

An electronic copy of the Draft BAR was also provided along with the notification for comment. A time period of 40 days were provided to potential I&APs to register and / or comment on the proposed project. In addition, a hard copy of the Draft BAR was made available for public comment at the local library in Clocolan as well as OVK, Clocolan.

A register will be kept throughout the consultation process. This register will be updated with the information of all persons / organisations responding on the notification and / or registering during the allowed time period. This register together with a Comments and Response Report related with the Draft BAR will be attached to the Final BAR.

Refer to Appendix E5 attached hereto for a list of I&APs identified and notified of the proposed project up to date. Proof of notifications will be included in the Final BAR.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Lesotho DWA Mr. Mojakisane	The proposed project is a joint venture between DWA, FS and Lesotho DWA. Both parties will receive the readings from the weir to enable the departments in catchment management decisions in future. The Draft BAR will be submitted to Lesotho DWA for comment and advice towards the way forward in terms of the legal processes	Tel: +266 22325983 Cell: +266 62215060 Fax: +266 22267508 mojakisanem@yahoo.com

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	to be followed for processing of the application for Environmental Authorisation. Proof of submission of this document and any comments received will be included in the Final BAR.	
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Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

NOTE:
The registration and comment period for identified and potential I&AP's are currently underway. All comments received will be assessed and included in the Final BAR.

Summary of main issues raised by I&APs	Summary of response from EAP

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

NOTE:
All comments received will be addressed. A copy of all comments as well as response to comments will be attached in the Final BAR.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority / Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	E-mail	Postal address
District Municipal Manager	Ms. Mathokoana Mopedi (Executive Mayor)	058 718 1014 / 84	058 718 1078		Private Bag X810, Witsieshoek, 9870

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Local Municipal Manager	Mr. Bafana Mthembu (Municipal Manager)	051 933 9302	051 933 9363		P.O. Box 116, Ficksburg, 9730
Municipal Ward Councillor (Ward 9)	Ward Councillor: Ward 9	051 933 9302	051 933 9363		P.O. Box 116, Ficksburg, 9730
Deputy Director: Free State Dept of Economic Development, Tourism and Environmental Affairs	Grace Mkhosana	051-400 4817/19	051-400 4842/11	Mkhosana@dteea.fs.gov.za	Private Bag X20801 Bloemfontein 9300
Department of Water Affairs (Free State)	Mr. George Nel	051 405 9265		NelG@dwa.gov.za	P.O. Box 528 Bloemfontein 9300

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

NOTE:

Proof of written notifications sent to all relevant parties will be provided in the Final BAR.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

NOTE:

A register will be kept throughout the consultation process. This register will be updated with the information of all persons / organisations responding on the notification and / or registering during the allowed time period. This register together with a Comments and Response Report related with the Draft BAR will be attached to the Final BAR.

Refer to Appendix E5 attached hereto for a list of I&APs identified and notified of the proposed project up to date. Proof of notifications will be included in the Final BAR. Copies of any correspondence will be attached to the Final BAR.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Note:

Also refer to the Fish Assessment report attached hereto in Appendix D for a description of the potential impacts specifically related with the fish present in the Caledon River expected to be associated with the proposed weir. These impacts are only summarised in this section of this BAR and the Impact Assessment attached in Appendix F.

Activity	Impact summary	Significance	Proposed mitigation
<i>Alternative 1 (preferred alternative)</i>			
Planning and Design Phase	Direct impacts: - None	- N/A	- No impacts expected
	Indirect impacts: - None	- N/A	- No impacts expected
	Cumulative impacts: - None	- N/A	- No impacts expected
Construction Phase	Direct impacts: - Vegetation destruction on river banks during the construction phase - Noise elevation due to construction activities - Nuisance dust generation - Channelling the flow of a part of the river to ensure that the preparation activities and construction activities in the river can be undertaken - Alteration of the bed bank and impeding of the water	- Without mitigation: Moderate - With mitigation: Low	- Clearance of vegetation will be limited to the river bank adjacent to the proposed construction area - Areas with extensive growth of alienated species should be cleared thereof. - A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the

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Activity	Impact summary	Significance	Proposed mitigation
	<p>flow at the construction area. These activities will be permanent and proper mitigation measures should be implemented to limit the effect thereof.</p> <ul style="list-style-type: none"> - Flow of natural runoff water during rain events could potentially be obstructed - Elevated erosion due to the removal of riparian habitat - Modified flows in downstream waterways - Potential contamination of the river due to accidental spills during the construction activities 		<p>construction site to limit dust generation and elevated noise levels</p> <ul style="list-style-type: none"> - Construction vehicles will only use designated and existing pathways / roads - Dust control measures will be investigated if nuisance dust generation during construction proves to be problematic - All construction vehicles will be equipped with silencers and noise levels will be investigated if it proves to be problematic.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> - Potential erosion of the disturbed sand on the river bank - Establishment of alien vegetation / declared weeds on areas disturbed during construction. - Upstream waste and floating debris (such as branches) may become trapped at the sections of the weir under construction. - Potential negative impact in terms of the water quality, flow and riparian vegetation in the nearby area - The disturbance of the bed and banks of the river will increase the suspended solids in the river during construction. This may result in an increase in siltation downstream of the construction site. 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<ul style="list-style-type: none"> - Storm water measures should be implemented, where necessary to manage storm water and prevent erosion - Establishment of alien vegetation should be monitored. - Care should be taken not to dump or spill any waste or potential hazardous substances during construction - In the event of spillage of such substances, including diesel or oil, DWA should be notified thereof immediately - No construction and / or any other waste may be dumped in the veld or the water resource - Receptacles should be placed at easy accessed points for the collection of general waste. - These receptacles should be placed in such a way and at such a locality that the potential spillage from these receptacles will not

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Activity	Impact summary	Significance	Proposed mitigation
			<p>pollute the river</p> <ul style="list-style-type: none"> - These receptacles should be emptied on a regular basis and disposed of at an authorised landfill site in Clocolan. - Any construction waste to be disposed will be collected by the contractor on a regular basis and be disposed of at an authorised landfill site in Clocolan. - Temporary toilets will be made available to employees during construction - Sewage from these toilets will be managed appropriately and not be disposed of on site or the surrounding environment - No sewage will be disposed of in the river - Best practices will be implemented in terms of waste management and the handling of potential hazardous substances. No diesel will be stored on site.
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Severe erosion may occur if proper mitigation measures are not implemented to limit erosion. - Increase in siltation 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<ul style="list-style-type: none"> - Visual inspection for severe erosion will be undertaken regularly - Mitigation measures (e.g. gabions) will be implemented at areas with severe erosion
Operational Phase	<p>Direct impacts:</p> <ul style="list-style-type: none"> - The gauging weir will cause a damming effect to some degree upstream of the weir - Upstream waste and floating debris (such as branches) may become trapped potentially affecting the accuracy with which the water flows is gauged and impacting on the river quality. 	<ul style="list-style-type: none"> - Without mitigation: Low - With mitigation: Low 	<ul style="list-style-type: none"> - Maintenance and repair will be undertaken as and when necessary. - The weir will be designed in such way to limit any debris to be trapped as far possible and / or for it to be washed away during high flow.

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Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> - Change in the flow of the river and riparian vegetation in the nearby area as a result of the damming effect. Although the damming effect will initially result in deeper pools, the saltation over time will result in shallow areas. This will result in a change of the fish habitat (and presence of fish species) upstream and downstream of the weir. 		
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> - The change in low flow height will result in an upward shift of the riparian zones associated with the Marginal- and Lower riparian zone for the area above the proposed weir. (please refer to the Fish Assessment in the Caledon River, proposed construction of a gauging weir report attached hereto) 	<ul style="list-style-type: none"> - Without mitigation: Low - With mitigation: Low 	<ul style="list-style-type: none"> - None
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Siltation - Change in the fish habitat available 	<ul style="list-style-type: none"> - Without mitigation: Low - With mitigation: Low 	<ul style="list-style-type: none"> - The engineers designed the weir in such a way to minimise the siltation effect - The siltated areas will be opened by the faster flowing waters during flooding events
Decommissioning Phase (The decommissioning activities will be limited to the removal of the weir and its associated structures, together with the rehabilitation of the disturbed footprint)	<p>It is not anticipated that the operational phase of the proposed project will come to an end in the near future. Should it be decided to end the operational activities at the weir and the project should be decommissioned and the area be rehabilitated, the following should be taken into consideration:</p> <p>Potential impacts:</p> <ul style="list-style-type: none"> - Possible destruction of the established riparian vegetation during the rehabilitation phase - Noise elevation due to rehabilitation activities - Nuisance dust generation - Channelling of the flow of a part of the river to ensure that the rehabilitation activities in the river can be undertaken - Alteration of the river bed and 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<p>A detailed rehabilitation plan will be developed and submitted to DEA for approval prior to decommissioning of the project (if considered).</p> <ul style="list-style-type: none"> - No vegetation will be cleared unnecessary. Vegetation will be re-established at the disturbed footprint left after the removal of any concrete structures during

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Activity	Impact summary	Significance	Proposed mitigation
	<p>bank at the rehabilitation area. These activities will be temporary and proper mitigation measures will be implemented to limit the effect thereof</p> <ul style="list-style-type: none"> - Elevated erosion due to the disturbance of the established riparian vegetation. - Modified flows in downstream waterways - Potential contamination of the river due to accidental spills during the rehabilitation activities - Establishment of alien vegetation / declared weeds on areas disturbed during the rehabilitation process. - Increase in suspended solids in the water subsequently resulting in an increase in siltation. - Dumping of waste in the river or surrounding environment. 		<p>decommissioning.</p> <ul style="list-style-type: none"> - Establishment of alien vegetation should be monitored - Areas with extensive growth of alienated species should be cleared thereof - A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the site to be rehabilitated - Construction vehicles will only use designated and existing pathways / roads. These roads will be rehabilitated if it is not to be used by the landowner. - Dust control measures will be investigated if nuisance dust generation during rehabilitation process proves to be problematic - All construction vehicles will be equipped with silencers and noise levels will be investigated if proves to be problematic - Storm water measures should be implemented, where necessary to manage storm water and prevent erosion - Care should be taken not to spill any potential hazardous substances during decommissioning or rehabilitation. - No construction and / or any other waste (including untreated effluent) may be dumped in the veld or the water resource - All waste should be collected and removed from site after decommissioning. Waste

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Activity	Impact summary	Significance	Proposed mitigation
			should be managed according to best practice and disposed of at an authorised landfill facility. <ul style="list-style-type: none">- Visual inspection for severe erosion will be undertaken regularly- Mitigation measures will be implemented at areas with severe erosion

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Activity	Impact summary	Significance	Proposed mitigation
Alternative 2 (Locality)			
Planning and Design Phase	Direct impacts: - None	- N/A	- No impacts expected
	Indirect impacts: - None	- N/A	- No impacts expected
	Cumulative impacts: - None	- N/A	- No impacts expected
Construction Phase	Direct impacts: <ul style="list-style-type: none"> - Vegetation destruction on river banks during the construction phase - Noise elevation due to construction activities - Nuisance dust generation - Channelling the flow of a part of the river to ensure that the preparation activities and construction activities in the river can be undertaken - Alteration of the bed bank and impeding of the water flow at the construction area. These activities will be permanent and proper mitigation measures should be implemented to limit the effect thereof. - Flow of natural runoff water during rain events could potentially be obstructed - Elevated erosion due to the removal of riparian habitat - Modified flows in downstream waterways - Potential contamination of the river due to accidental spills during the construction activities 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<ul style="list-style-type: none"> - Clearance of vegetation will be limited to the river bank adjacent to the proposed construction area - Areas with extensive growth of alienated species should be cleared thereof. - A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the construction site to limit dust generation and elevated noise levels - Construction vehicles will only use designated and existing pathways / roads - Dust control measures will be investigated if nuisance dust generation during construction proofs to be problematic - All construction vehicles will be equipped with silencers and noise levels will be investigated if it proofs to be problematic.
	Indirect impacts: <ul style="list-style-type: none"> - Potential erosion of the disturbed sand on the river bank - Establishment of alien vegetation / declared weeds on areas disturbed during construction. - Upstream waste and floating debris (such as branches) 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<ul style="list-style-type: none"> - Storm water measures should be implemented, where necessary to manage storm water and prevent erosion - Establishment of alien vegetation should be monitored. - Care should be taken not to dump or spill any waste

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Activity	Impact summary	Significance	Proposed mitigation
	<p>may become trapped at the sections of the weir under construction.</p> <ul style="list-style-type: none"> - Potential negative impact in terms of the water quality, flow and riparian vegetation in the nearby area - The disturbance of the bed and banks of the river will increase the suspended solids in the river during construction. This may result in an increase in siltation downstream of the construction site. 		<p>or potential hazardous substances during construction</p> <ul style="list-style-type: none"> - In the event of spillage of such substances, including diesel or oil, DWA should be notified thereof immediately - No construction and / or any other waste may be dumped in the veld or the water resource - Receptacles should be placed at easy accessed points for the collection of general waste. - These receptacles should be placed in such a way and at such a locality that the potential spillage from these receptacles will not pollute the river - These receptacles should be emptied on a regular basis and disposed of at an authorised landfill site in Clocolan. - Any construction waste to be disposed will be collected by the contractor on a regular basis and be disposed of at an authorised landfill site in Clocolan. - Temporary toilets will be made available to employees during construction - Sewage from these toilets will be managed appropriately and not be disposed of on site or the surrounding environment - No sewage will be disposed of in the river - Best practices will be implemented in terms of waste management and the handling of potential

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Activity	Impact summary	Significance	Proposed mitigation
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Severe erosion may occur if proper mitigation measures are not implemented to limit erosion. - Increase in siltation 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<p>hazardous substances. No diesel will be stored on site.</p> <ul style="list-style-type: none"> - Visual inspection for severe erosion will be undertaken regularly - Mitigation measures (e.g. gabions) will be implemented at areas with severe erosion
Operational Phase	<p>Direct impacts:</p> <ul style="list-style-type: none"> - The gauging weir will cause a damming effect to some degree upstream of the weir - Upstream waste and floating debris (such as branches) may become trapped potentially affecting the accuracy with which the water flows is gauged and impacting on the river quality. - Change in the flow of the river and riparian vegetation in the nearby area as a result of the damming effect. Although the damming effect will initially result in deeper pools, the saltation over time will result in shallow areas. This will result in a change of the fish habitat (and presence of fish species) upstream and downstream of the weir. 	<ul style="list-style-type: none"> - Without mitigation: Low - With mitigation: Low 	<ul style="list-style-type: none"> - Maintenance and repair will be undertaken as and when necessary. - The weir will be designed in such way to limit any debris to be trapped as far possible and / or for it to be washed away during high flow.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> - The change in low flow height will result in an upward shift of the riparian zones associated with the Marginal- and Lower riparian zone for the area above the proposed weir. (please refer to the Fish Assessment in the Caledon River, proposed construction of a gauging weir report attached hereto) 	<ul style="list-style-type: none"> - Without mitigation: Low - With mitigation: Low 	<ul style="list-style-type: none"> - None
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Siltation - Change in the fish habitat available 	<ul style="list-style-type: none"> - Without mitigation: Low - With 	<ul style="list-style-type: none"> - The engineers designed the weir in such a way to minimise the siltation effect

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Activity	Impact summary	Significance	Proposed mitigation
		mitigation: Low	- The siltated areas will be opened by the faster flowing waters during flooding events
Decommissioning Phase (The decommissioning activities will be limited to the removal of the weir and its associated structures, together with the rehabilitation of the disturbed footprint)	<p>It is not anticipated that the operational phase of the proposed project will come to an end in the near future. Should it be decided to end the operational activities at the weir and the project should be decommissioned and the area be rehabilitated, the following should be taken into consideration:</p> <p>Potential impacts:</p> <ul style="list-style-type: none"> - Possible destruction of the established riparian vegetation during the rehabilitation phase - Noise elevation due to rehabilitation activities - Nuisance dust generation - Channelling of the flow of a part of the river to ensure that the rehabilitation activities in the river can be undertaken - Alteration of the river bed and bank at the rehabilitation area. These activities will be temporary and proper mitigation measures will be implemented to limit the effect thereof - Elevated erosion due to the disturbance of the established riparian vegetation. - Modified flows in downstream waterways - Potential contamination of the river due to accidental spills during the rehabilitation activities - Establishment of alien vegetation / declared weeds on areas disturbed during the rehabilitation process. - Increase in suspended solids in the water subsequently resulting in an increase in siltation. - Dumping of waste in the river or surrounding environment. 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<p>A detailed rehabilitation plan will be developed and submitted to DEA for approval prior to decommissioning of the project (if considered).</p> <ul style="list-style-type: none"> - No vegetation will be cleared unnecessary. Vegetation will be re-established at the disturbed footprint left after the removal of any concrete structures during decommissioning. - Establishment of alien vegetation should be monitored - Areas with extensive growth of alienated species should be cleared thereof - A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the site to be rehabilitated - Construction vehicles will only use designated and existing pathways / roads. These roads will be rehabilitated if it is not to be used by the landowner. - Dust control measures will be investigated if nuisance dust generation during rehabilitation process proves to be problematic - All construction vehicles will be equipped with silencers and noise levels

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Activity	Impact summary	Significance	Proposed mitigation
			<p>will be investigated if proofs to be problematic</p> <ul style="list-style-type: none"> - Storm water measures should be implemented, where necessary to manage storm water and prevent erosion - Care should be taken not to spill any potential hazardous substances during decommissioning or rehabilitation. - No construction and / or any other waste (including untreated effluent) may be dumped in the veld or the water resource - All waste should be collected and removed from site after decommissioning. Waste should be managed according to best practice and disposed of at an authorised landfill facility. - Visual inspection for severe erosion will be undertaken regularly - Mitigation measures will be implemented at areas with severe erosion

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Activity	Impact summary	Significance	Proposed mitigation
Alternative 3 (Season)			
Planning and Design Phase	Direct impacts: - None	- N/A	- No impacts expected
	Indirect impacts: - None	- N/A	- No impacts expected
	Cumulative impacts: - None	- N/A	- No impacts expected
Construction Phase	Direct impacts: <ul style="list-style-type: none"> - Vegetation destruction on river banks during the construction phase - Noise elevation due to construction activities - Nuisance dust generation - Channelling the flow of a part of the river to ensure that the preparation activities and construction activities in the river can be undertaken - Alteration of the bed bank and impeding of the water flow at the construction area. These activities will be permanent and proper mitigation measures should be implemented to limit the effect thereof. - Flow of natural runoff water during rain events could potentially be obstructed - Elevated erosion due to the removal of riparian habitat - Modified flows in downstream waterways - Potential contamination of the river due to accidental spills during the construction activities 	<ul style="list-style-type: none"> - Without mitigation: Moderate-High - With mitigation: Moderate 	<ul style="list-style-type: none"> - Clearance of vegetation will be limited to the river bank adjacent to the proposed construction area - Areas with extensive growth of alienated species should be cleared thereof. - A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the construction site to limit dust generation and elevated noise levels - Construction vehicles will only use designated and existing pathways / roads - Dust control measures will be investigated if nuisance dust generation during construction proves to be problematic - All construction vehicles will be equipped with silencers and noise levels will be investigated if it proves to be problematic.
	Indirect impacts: <ul style="list-style-type: none"> - Potential erosion of the disturbed sand on the river bank - Establishment of alien vegetation / declared weeds on areas disturbed during construction. - Upstream waste and floating debris (such as branches) 	<ul style="list-style-type: none"> - Without mitigation: Moderate-High - With mitigation: Moderate 	<ul style="list-style-type: none"> - Storm water measures should be implemented, where necessary to manage storm water and prevent erosion - Establishment of alien vegetation should be monitored. - Care should be taken not to dump or spill any waste

	<p>may become trapped at the sections of the weir under construction.</p> <ul style="list-style-type: none"> - Potential negative impact in terms of the water quality, flow and riparian vegetation in the nearby area - The disturbance of the bed and banks of the river will increase the suspended solids in the river during construction. This may result in an increase in siltation downstream of the construction site. 		<p>or potential hazardous substances during construction</p> <ul style="list-style-type: none"> - In the event of spillage of such substances, including diesel or oil, DWA should be notified thereof immediately - No construction and / or any other waste may be dumped in the veld or the water resource - Receptacles should be placed at easy accessed points for the collection of general waste. - These receptacles should be placed in such a way and at such a locality that the potential spillage from these receptacles will not pollute the river - These receptacles should be emptied on a regular basis and disposed of at an authorised landfill site in Clocolan. - Any construction waste to be disposed will be collected by the contractor on a regular basis and be disposed of at an authorised landfill site in Clocolan. - Temporary toilets will be made available to employees during construction - Sewage from these toilets will be managed appropriately and not be disposed of on site or the surrounding environment - No sewage will be disposed of in the river - Best practices will be implemented in terms of waste management and the handling of potential hazardous substances. No
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			diesel will be stored on site.
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Severe erosion may occur if proper mitigation measures are not implemented to limit erosion. - Increase in siltation 	<ul style="list-style-type: none"> - Without mitigation: Moderate-High - With mitigation: Moderate 	<ul style="list-style-type: none"> - Visual inspection for severe erosion will be undertaken regularly - Mitigation measures (e.g. gabions) will be implemented at areas with severe erosion
Operational Phase	<p>Direct impacts:</p> <ul style="list-style-type: none"> - The gauging weir will cause a damming effect to some degree upstream of the weir - Upstream waste and floating debris (such as branches) may become trapped potentially affecting the accuracy with which the water flows is gauged and impacting on the river quality. - Change in the flow of the river and riparian vegetation in the nearby area as a result of the damming effect. Although the damming effect will initially result in deeper pools, the saltation over time will result in shallow areas. This will result in a change of the fish habitat (and presence of fish species) upstream and downstream of the weir. 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Moderate 	<ul style="list-style-type: none"> - Maintenance and repair will be undertaken as and when necessary. - The weir will be designed in such way to limit any debris to be trapped as far possible and / or for it to be washed away during high flow.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> - The change in low flow height will result in an upward shift of the riparian zones associated with the Marginal- and Lower riparian zone for the area above the proposed weir. (please refer to the Fish Assessment in the Caledon River, proposed construction of a gauging weir report attached hereto) 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Moderate 	<ul style="list-style-type: none"> - None
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Siltation - Change in the fish habitat available 	<ul style="list-style-type: none"> - Without mitigation: Low - With mitigation: 	<ul style="list-style-type: none"> - The engineers designed the weir in such a way to minimise the siltation effect - The siltated areas will be

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		Low	opened by the faster flowing waters during flooding events
Decommissioning Phase (The decommissioning activities will be limited to the removal of the weir and its associated structures, together with the rehabilitation of the disturbed footprint)	<p>It is not anticipated that the operational phase of the proposed project will come to an end in the near future. Should it be decided to end the operational activities at the weir and the project should be decommissioned and the area be rehabilitated, the following should be taken into consideration:</p> <p>Potential impacts:</p> <ul style="list-style-type: none"> - Possible destruction of the established riparian vegetation during the rehabilitation phase - Noise elevation due to rehabilitation activities - Nuisance dust generation - Channelling of the flow of a part of the river to ensure that the rehabilitation activities in the river can be undertaken - Alteration of the river bed and bank at the rehabilitation area. These activities will be temporary and proper mitigation measures will be implemented to limit the effect thereof - Elevated erosion due to the disturbance of the established riparian vegetation. - Modified flows in downstream waterways - Potential contamination of the river due to accidental spills during the rehabilitation activities - Establishment of alien vegetation / declared weeds on areas disturbed during the rehabilitation process. - Increase in suspended solids in the water subsequently resulting in an increase in siltation. - Dumping of waste in the river or surrounding environment. 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Moderate 	<p>A detailed rehabilitation plan will be developed and submitted to DEA for approval prior to decommissioning of the project (if considered).</p> <ul style="list-style-type: none"> - No vegetation will be cleared unnecessary. Vegetation will be re-established at the disturbed footprint left after the removal of any concrete structures during decommissioning. - Establishment of alien vegetation should be monitored - Areas with extensive growth of alienated species should be cleared thereof - A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the site to be rehabilitated - Construction vehicles will only use designated and existing pathways / roads. These roads will be rehabilitated if it is not to be used by the landowner. - Dust control measures will be investigated if nuisance dust generation during rehabilitation process proofs to be problematic - All construction vehicles will be equipped with silencers and noise levels will be investigated if proofs to be problematic

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			<ul style="list-style-type: none">- Storm water measures should be implemented, where necessary to manage storm water and prevent erosion- Care should be taken not to spill any potential hazardous substances during decommissioning or rehabilitation.- No construction and / or any other waste (including untreated effluent) may be dumped in the veld or the water resource- All waste should be collected and removed from site after decommissioning. Waste should be managed according to best practice and disposed of at an authorised landfill facility.- Visual inspection for severe erosion will be undertaken regularly- Mitigation measures will be implemented at areas with severe erosion
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Activity	Impact summary	Significance	Proposed mitigation
Alternative 4 (design)			
Planning and Design Phase	Direct impacts: - None	- N/A	- No impacts expected
	Indirect impacts: - None	- N/A	- No impacts expected
	Cumulative impacts: - None	- N/A	- No impacts expected
Construction Phase	Direct impacts: <ul style="list-style-type: none"> - Vegetation destruction on river banks during the construction phase - Noise elevation due to construction activities - Nuisance dust generation - Channelling the flow of a part of the river to ensure that the preparation activities and construction activities in the river can be undertaken - Alteration of the bed bank and impeding of the water flow at the construction area. These activities will be permanent and proper mitigation measures should be implemented to limit the effect thereof. - Flow of natural runoff water during rain events could potentially be obstructed - Elevated erosion due to the removal of riparian habitat - Modified flows in downstream waterways - Potential contamination of the river due to accidental spills during the construction activities 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<ul style="list-style-type: none"> - Clearance of vegetation will be limited to the river bank adjacent to the proposed construction area - Areas with extensive growth of alienated species should be cleared thereof. - A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the construction site to limit dust generation and elevated noise levels - Construction vehicles will only use designated and existing pathways / roads - Dust control measures will be investigated if nuisance dust generation during construction proofs to be problematic - All construction vehicles will be equipped with silencers and noise levels will be investigated if it proofs to be problematic.
	Indirect impacts: <ul style="list-style-type: none"> - Potential erosion of the disturbed sand on the river bank - Establishment of alien vegetation / declared weeds on areas disturbed during construction. - Upstream waste and floating debris (such as branches) 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<ul style="list-style-type: none"> - Storm water measures should be implemented, where necessary to manage storm water and prevent erosion - Establishment of alien vegetation should be monitored. - Care should be taken not to dump or spill any waste

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Activity	Impact summary	Significance	Proposed mitigation
	<p>may become trapped at the sections of the weir under construction.</p> <ul style="list-style-type: none"> - Potential negative impact in terms of the water quality, flow and riparian vegetation in the nearby area - The disturbance of the bed and banks of the river will increase the suspended solids in the river during construction. This may result in an increase in siltation downstream of the construction site. 		<p>or potential hazardous substances during construction</p> <ul style="list-style-type: none"> - In the event of spillage of such substances, including diesel or oil, DWA should be notified thereof immediately - No construction and / or any other waste may be dumped in the veld or the water resource - Receptacles should be placed at easy accessed points for the collection of general waste. - These receptacles should be placed in such a way and at such a locality that the potential spillage from these receptacles will not pollute the river - These receptacles should be emptied on a regular basis and disposed of at an authorised landfill site in Clocolan. - Any construction waste to be disposed will be collected by the contractor on a regular basis and be disposed of at an authorised landfill site in Clocolan. - Temporary toilets will be made available to employees during construction - Sewage from these toilets will be managed appropriately and not be disposed of on site or the surrounding environment - No sewage will be disposed of in the river - Best practices will be implemented in terms of waste management and the handling of potential

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Activity	Impact summary	Significance	Proposed mitigation
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Severe erosion may occur if proper mitigation measures are not implemented to limit erosion. - Increase in siltation 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<p>hazardous substances. No diesel will be stored on site.</p> <ul style="list-style-type: none"> - Visual inspection for severe erosion will be undertaken regularly - Mitigation measures (e.g. gabions) will be implemented at areas with severe erosion
Operational Phase	<p>Direct impacts:</p> <ul style="list-style-type: none"> - The gauging weir will cause a damming effect to some degree upstream of the weir - Upstream waste and floating debris (such as branches) may become trapped potentially affecting the accuracy with which the water flows is gauged and impacting on the river quality. - Change in the flow of the river and riparian vegetation in the nearby area as a result of the damming effect. Although the damming effect will initially result in deeper pools, the saltation over time will result in shallow areas. This will result in a change of the fish habitat (and presence of fish species) upstream and downstream of the weir. 	<ul style="list-style-type: none"> - Without mitigation: Low - With mitigation: Low 	<ul style="list-style-type: none"> - Maintenance and repair will be undertaken as and when necessary. - The weir will be designed in such way to limit any debris to be trapped as far possible and / or for it to be washed away during high flow.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> - The change in low flow height will result in an upward shift of the riparian zones associated with the Marginal- and Lower riparian zone for the area above the proposed weir. (please refer to the Fish Assessment in the Caledon River, proposed construction of a gauging weir report attached hereto) 	<ul style="list-style-type: none"> - Without mitigation: Low - With mitigation: Low 	<ul style="list-style-type: none"> - None
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Siltation - Change in the fish habitat available 	<ul style="list-style-type: none"> - Without mitigation: Low - With 	<ul style="list-style-type: none"> - The engineers designed the weir in such a way to minimise the siltation effect

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Activity	Impact summary	Significance	Proposed mitigation
		mitigation: Low	- The siltated areas will be opened by the faster flowing waters during flooding events
Decommissioning Phase (The decommissioning activities will be limited to the removal of the weir and its associated structures, together with the rehabilitation of the disturbed footprint)	<p>It is not anticipated that the operational phase of the proposed project will come to an end in the near future. Should it be decided to end the operational activities at the weir and the project should be decommissioned and the area be rehabilitated, the following should be taken into consideration:</p> <p>Potential impacts:</p> <ul style="list-style-type: none"> - Possible destruction of the established riparian vegetation during the rehabilitation phase - Noise elevation due to rehabilitation activities - Nuisance dust generation - Channelling of the flow of a part of the river to ensure that the rehabilitation activities in the river can be undertaken - Alteration of the river bed and bank at the rehabilitation area. These activities will be temporary and proper mitigation measures will be implemented to limit the effect thereof - Elevated erosion due to the disturbance of the established riparian vegetation. - Modified flows in downstream waterways - Potential contamination of the river due to accidental spills during the rehabilitation activities - Establishment of alien vegetation / declared weeds on areas disturbed during the rehabilitation process. - Increase in suspended solids in the water subsequently resulting in an increase in siltation. - Dumping of waste in the river or surrounding environment. 	<ul style="list-style-type: none"> - Without mitigation: Moderate - With mitigation: Low 	<p>A detailed rehabilitation plan will be developed and submitted to DEA for approval prior to decommissioning of the project (if considered).</p> <ul style="list-style-type: none"> - No vegetation will be cleared unnecessary. Vegetation will be re-established at the disturbed footprint left after the removal of any concrete structures during decommissioning. - Establishment of alien vegetation should be monitored - Areas with extensive growth of alienated species should be cleared thereof - A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the site to be rehabilitated - Construction vehicles will only use designated and existing pathways / roads. These roads will be rehabilitated if it is not to be used by the landowner. - Dust control measures will be investigated if nuisance dust generation during rehabilitation process proves to be problematic - All construction vehicles will be equipped with silencers and noise levels

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Activity	Impact summary	Significance	Proposed mitigation
			will be investigated if proofs to be problematic <ul style="list-style-type: none"> - Storm water measures should be implemented, where necessary to manage storm water and prevent erosion - Care should be taken not to spill any potential hazardous substances during decommissioning or rehabilitation. - No construction and / or any other waste (including untreated effluent) may be dumped in the veld or the water resource - All waste should be collected and removed from site after decommissioning. Waste should be managed according to best practice and disposed of at an authorised landfill facility. - Visual inspection for severe erosion will be undertaken regularly - Mitigation measures will be implemented at areas with severe erosion

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative 1 (preferred alternative)

The likelihood of the expected impacts occurring will be low if all the recommended mitigation measures and best practices are implemented throughout the construction period.
 Due to the nature of the proposed activity (i.e. the construction of a weir), most of the the expected impacts will be mostly temporary and localised to the part of the river (and river bed and banks) near

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the construction area.

In addition, the weir will have an influence on the natural flow of the river, as well as the seasonal upstream migration of some fish species. However, an intensive investigation on the necessity of a fishway to accommodate fish species to migrate upstream is currently undertaken.

If proper management measures are implemented in terms of the collection and disposal of general waste, storage and / or handling of potential hazardous substances as well as the management of temporary toilet facilities, the significance of the potential impacts expected to be associated with the construction of the weir will be low.

Alternative 2 (locality)

All of the above, including:

- More saltation
- More erosion: more storm water measures will have to be implemented
- Less accurate water flow measurements
- Construction of an access road that will lead to the loss of more vegetation growth

Alternative 3 (scheduling)

All of the above, including:

- Erosion: more storm water measures will have to be implemented
- Less working hours per week: Rain will limit the working hours
- The likelihood of the expected impacts will be low to moderate if all the recommended mitigation measures and best practices are implemented
- These impacts will be temporary and localised. However, severe erosion may occur if proper mitigation measures are not implemented

Alternative 4 (design)

All of the above, including:

- A larger area of the river bank will be impacted upon due to the construction activities
- This alternative will be more expensive
- The necessity of the inclusion of a fishway (or not) to accommodate the seasonal migration of fish species occurring in the Caledon River is still under investigation.

No-go alternative (compulsory)

No obstruction in the river will be constructed.

However, this will lead to the following:

- Informative choices on the water usage (including the releasing of upstream waters) will not be made
- DWA, Free State and DWA, Lesotho will not be able to measure the water flow in the Caledon River on a regular basis
- These parties will not have sufficient information on the waterflow to aid in decision making processes in terms of potential future projects

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES

NO

NOTE:

The information contained in this report does not include the comments / concerns / suggestions from IAP's. IAP's are given the opportunity to comment on this document to enable the practitioner to make the necessary recommendation.

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

As indicated in the Fish Assessment report, hydrological information on the daily flow record could assist in the final decision-making process. This information will be interpreted and included in the Final BAR.

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

Although the input from interested and / or affected parties are still outstanding, it is suggested that the following mitigation measures should be implemented if the construction of a weir is considered:

- Clearance of vegetation will be limited to the river bank adjacent to the proposed construction area
- Areas with extensive growth of alienated species should be cleared thereof.
- A speed limit will be enforced on the construction vehicles utilising the gravel road to obtain access to the construction site to limit dust generation and elevated noise levels
- Construction vehicles will only use designated and existing pathways / roads
- Dust control measures will be investigated if nuisance dust generation during construction proofs to be problematic
- All construction vehicles will be equipped with silencers and noise levels will be investigated if it proofs to be problematic.
- Storm water measures should be implemented, where necessary to manage storm water and prevent erosion
- Establishment of alien vegetation should be monitored.
- Care should be taken not to dump or spill any waste or potential hazardous substances during construction
- In the event of spillage of such substances, including diesel or oil, DWA should be notified thereof immediately
- No construction and / or any other waste may be dumped in the veld or the water resource
- Receptacles should be placed at easy accessed points for the collection of general waste.
- These receptacles should be placed in such a way and at such a locality that the potential spillage from these receptacles will not pollute the river
- These receptacles should be emptied on a regular basis and disposed of at an authorised landfill site in Clocolan.
- Any construction waste to be disposed will be collected by the contractor on a regular basis and be disposed of at an authorised landfill site in Clocolan.
- Temporary toilets will be made available to employees during construction
- Sewage from these toilets will be managed appropriately and not be disposed of on site or the surrounding environment
- No sewage will be disposed of in the river
- Best practices will be implemented in terms of waste management and the handling of potential hazardous substances. No diesel will be stored on site.
- Visual inspection for severe erosion will be undertaken regularly
- Mitigation measures (e.g. gabions) will be implemented at areas with severe erosion

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- Maintenance and repair will be undertaken as and when necessary.
- The weir will be designed in such way to limit any debris to be trapped as far possible and / or for it to be washed away during high flow.
- The engineers have to design the weir in such a way to minimise the siltation effect

Is an EMPr attached?

YES	
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The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

NAME OF EAP

SIGNATURE OF EAP

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information